NOVEMBER 1, 2016

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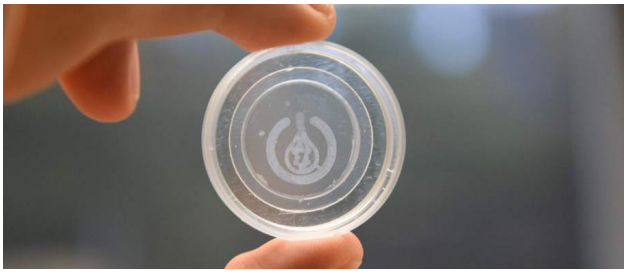
Ignacio Tovar is a founding partner of Steed, a small innovation consultancy based in Mexico City and organizer of the futurologi event series. He is currently studying a Master's in Innovation Entre... [Read More]

BiotINK: Now you can print tissue with your own 3D printer



Researchers at the Germany's Technical University of Munich presented their biotINK project at the International Genetically Engineered Machine 2016 Giant Jamboree in Boston on October 29. BiotINK aims to make printing complex 3D cellular structures cheaper, easier and faster by using a new technique that creates inks using biotin (vitamin B7) and streptavidin, a protein harvested from bacteria.

The Issue with Tissue

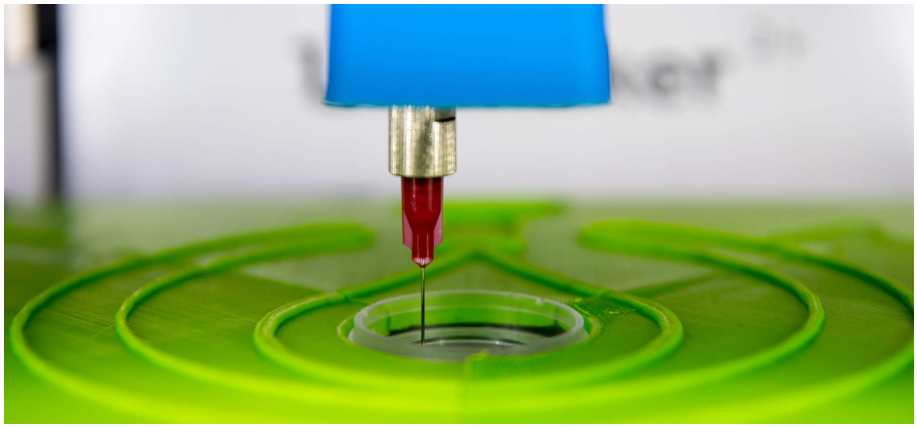
The traditional process for growing artificial tissue relies on scaffolding, since this technique allows cells to be held in place while they develop. In this process the 3D printed grid like structure, made of PLA normally, is seeded with organic cells that slowly grow throughout all the structure filling all the internal spaces. As the organic cells multiply, eventually the scaffold degrades or is removed, leaving behind only the organic tissue.

There have been recent advances this bioprinting method, such as a new proposal for bioreactors from Greek scientists. In any case, scaffolding has its limitations; it is costly, the cell maturation process takes a long time and has certain size limitations.

Part of the research team: Julian Hofmann, Christoph Gruber, Luisa Krumwiede and Javier Luna Mazari. Image via: Technical University of Munich

Team Munich's Idea

The researchers, lead by Dr. Arne Skerra, propose a new method using desktop 3D printers to print organic 3D cellular structures. The method arranges two different type of components (genetically engineered cells and proteins) into a structure that quickly polymerizes creating a rigid structure. This two components are linked by a very strong bonding reaction, also found in nature, called the biotin-streptavidin interaction.



The printer in action. Image via: Technical University of Munich

Bioprinting, one step closer

Bioprinting is an sector of 3D printing that has many potential applications in the health research field. Among them, testing and experimentation for medical studies is a particular field where tissue engineering is crucial, for example as reported by 3DPI the latest advancements from a team at Harvard. This particular application for tissue engineering allows a faster understanding of human diseases, improving the rate at which scientists develop potential cures.

Perhaps a key to the potential success of this project is their openness to the bioprinter community through their website, in which they have documented publicly their project and share instructions to turn your normal 3D printer into a bioprinter. This invitation to collaborate celebrate the internet's main purpose of

being an open communication space, as explored at MozFest last weekend.

Featured image via the Technical University of Munich, by Andreas Heddergott.

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Nitin Balodi ·
Works at IP Analyst
This is great. Kudos to this team of young researchers. Such discoveries are opening up the space of bioprinting.

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